Avaya Agent Deskphone 16CC Installation and Maintenance Guide

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Interference

Using a cell, mobile, or GSM telephone, or a two-way radio in close proximity to an Avaya IP Telephone might cause interference.

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Chapter 1: Introduction

About This Guide

This guide describes how to install and maintain the Avaya Agent Deskphone 16CC in a Session Initiation Protocol (SIP) environment for exclusive use by Avaya Call Center 5.0.

Both of the following must be installed to use Avaya Agent Deskphone 16CC with the SIP protocol:

- Avaya Communication Manager Release 5.0 and greater, and
- SIP Enablement Session (SES) software Release 5.0 and greater.

Note:

Any reference to HTTP in this guide applies equally to HTTPS.

Intended Audience

This document is intended for personnel who install and administer Avaya Agent Deskphone 16CC telephones.

CAUTION:

Avaya does not support many of the products mentioned in this document. Take care to ensure that there is adequate technical support available for the servers involved, including, but not necessarily limited to, HTTP, HTTPS, and DHCP servers. If the servers are not functioning correctly, the telephones might not be able to operate correctly.

Document Organization

The guide contains the following sections:

Chapter 1: Introduction	Provides an overview of this guide.
Chapter 2: Avaya Agent Deskphone 16CC Installation	Describes the equipment and resources required to properly install and operate the Avaya Agent Deskphone 16CC in a non-call center environment. Provides instructions on installing the telephones out of the box.
Chapter 3: Local Administrative Options	Describes how to set local administrative options, if requested by the system or LAN administrator.
Chapter 4: Maintaining Avaya Agent Deskphone 16CC Telephones	Describes maintenance actions like downloading telephone software from the Avaya support Web site and customizing system values.
Chapter 5: Troubleshooting Guidelines	Describes error conditions and messages that might occur during installation and operation of the Avaya Agent Deskphone 16CCTelephones.
Appendix A: Restart Scenarios	Explains the different scenarios possible for the sequence of the restart process.
Appendix B: Glossary of Terms	Provides a glossary of terms used in this document or which are generally applicable to the Avaya Agent Deskphone 16CC.
Appendix C: Related Documentation	Provides references to external documents that relate to telephony in general.

Issue Date

This is the first release of this document, issued in January, 2008.

Online Documentation

See the Avaya support site at http://www.avaya.com/support for technical and end user documentation related to the Avaya Agent Deskphone 16CC. The Avaya Agent Deskphone 16CC is part of the Avaya Call Center 5.0 solution. Documents specific to the solution, such as *Getting Started with Avaya Call Center 5.0 and Avaya Agent Deskphone 16CC* (Document Number 129214) and *What's New for Avaya Call Center 5.0* are also available on the Avaya support site.

See Appendix C: Related Documentation for Web sites that list related, non-Avaya documents, such as those published by the Internet Engineering Task Force (IETF) and the International Telecommunication Union (ITU).

Customer Support

For Avaya Agent Deskphone 16CC Telephone support, call the Avaya support number provided to you by your Avaya representative or Avaya reseller.

Information about Avaya products can be obtained at the following URL:

http://www.avaya.com/support

Chapter 2: Avaya Agent Deskphone 16CC Installation

Introduction

The Avaya Agent Deskphone 16CC was developed to provide a SIP solution for Avaya call centers. When not being used as a call center agent telephone, the 16CC has standard Avaya SIP Advanced SIP (AST) telephone functionality.

The Avaya Agent Deskphone 16CC supports DHCP and HTTP/HTTPS over IPv4/UDP which enhance its administration and servicing. The 16CC uses DHCP to obtain dynamic IP Addresses and HTTP or HTTPS to download new software versions or customized settings for the telephones.

In compliance with Australian law, the following information is provided:

> This equipment shall be installed and maintained by trained service personnel. All the input/ output ports are classified as Safety Extra Low Voltage (SELV, in the meaning of IEC 60950). To maintain safety compliance when connecting the equipment electrically to other equipment, the interconnecting circuits shall be selected to provide continued conformance of clause 2.3 for SELV circuits (generally, double/reinforced insulation to 240Vac rms to any primary/mains circuitry and 120Vac rms to any telecommunications network circuitry). To ensure that these conditions are adhered to, interconnect the equipment only with the already approved/certified equipment.

Telephone Model

The 16CC is the only telephone set model currently defined in the Avaya Agent Deskphone 16CC Telephone family.

This document describes the installation of this telephone model and post-installation maintenance issues. For details about using the features provided by the telephones, see the user documentation for the telephone. For details about telephone administration, see the *Avaya Agent Deskphone for 16CC Telephone Administrator Guide,* available on the Avaya support Web site http://www.avaya.com/support. For details about call center administration, see *Avaya Communication Manager Release 5.0 Call Center Software Automated Call Distribution (ACD) Guide* (Document Number 07-300301).

Software

The Avaya Agent Deskphone 16CC ships from the factory with SIP firmware. However, a factory-shipped 16CC telephone might not contain the most up-to-date software for registration and SIP operation. When the telephone is first plugged in, a software download from an HTTP server might be initiated. The software download gives the telephone upgraded SIP functionality.

For subsequent downloads of software upgrades, SIP Enablement Services (SES) provides the capability for a remote reboot of the 16CC telephone. As a consequence of restarting, the telephone automatically downloads new software if it is available. Chapter 4: Maintaining Avaya Agent Deskphone 16CC Telephones covers downloading new software releases.

Pre-Installation Checklist

Before plugging in the Avaya Agent Deskphone 16CC telephones, verify that all the following requirements are met. Failure to do so prevents the telephones from working properly and can have a negative impact on the network. Print copies of this checklist for each server and 16CC telephone.

Verify These Network Requirements

- ❑ **1.** Ensure that the LAN uses Ethernet Category 5e cabling running the IPv4 version of Internet Protocol.
- ❑ **2.** Ensure that the following is installed and/or set up and operative:
  - Avaya Communication Manager (CM) Release 5.0.
  - SIP Enablement Services 5.0.
  - NTP Time Server.

  Important:

  The above must be configured properly to support SIP. Prior to plugging in the telephones the CM Off-PBX Station Form and other call center-related station form information must be completed to enable SIP and proper telephone operation within Avaya Communication Manager and Avaya Call Center 5.0. For information, see *Supporting SIP Phones in Communication Manager 4.0* (Document Number 555-245-206, Issue 7, April, 2007), *Implementing Avaya Call Center 5.0 with Avaya Agent Deskphone 16CC* (Document Number 129214), and *Avaya Agent Deskphone 16CC Administrator Guide* (Document Number16-602093).

Verify These Network Requirements (continued)

❑ **3.** The following circuit packs are installed on the switch:

- TN2602 IP Media Processor circuit pack. Sites with a TN2302 IP Media Processor circuit pack are strongly encouraged to install a TN2602 circuit pack to benefit from increased capacity.
- TN799B, C, or D Control-LAN (C-LAN) circuit pack.

Important:

SIP telephone firmware requires TN799C V3 or greater C-LAN circuit pack(s). For more information, see the *Communication Manager Software and Firmware Compatibility Matrix* on the Avaya support Web site http://www.avaya.com/support.

❑ **4.** The Communication Manager (CM) call server is configured correctly, as described in the *Avaya Agent Deskphone 16CC Administrator Guide* and Avaya Communication Manager documentation. Both documents are available at http://www.avaya.com/support.

❑ **5.** The DHCP server and application are administered as described in the *Avaya Agent Deskphone 16CC Administrator Guide*. Note that only Option 242 applies to Avaya Agent Deskphone 16CC telephones; Option 176 is not applicable to the 16CC.

❑ **6.** The HTTP server and application are administered as described in the *Avaya Agent Deskphone 16CC Administrator Guide*.

❑ **7.** The SIP upgrade script, telephone binary, and language files from the Avaya Support Web site, http://www.avaya.com/support, are loaded correctly on the HTTP/HTTPS server. Ensure that the

8. If applicable, ensure that the MSGNUM system parameter (for Voice Mail access) is administered as described in the *Avaya Agent Deskphone 16CC Administrator Guide*.

Notes:

- Any or all of the server applications mentioned in items 5-8 can be co-resident on the same hardware, subject to the specific restrictions of each individual application.
- See the *Avaya Agent Deskphone 16CC Administrator Guide* for more information about:
  - administering other network equipment,
  - administering applications like firewalls, and
  - information about topics like port utilization.

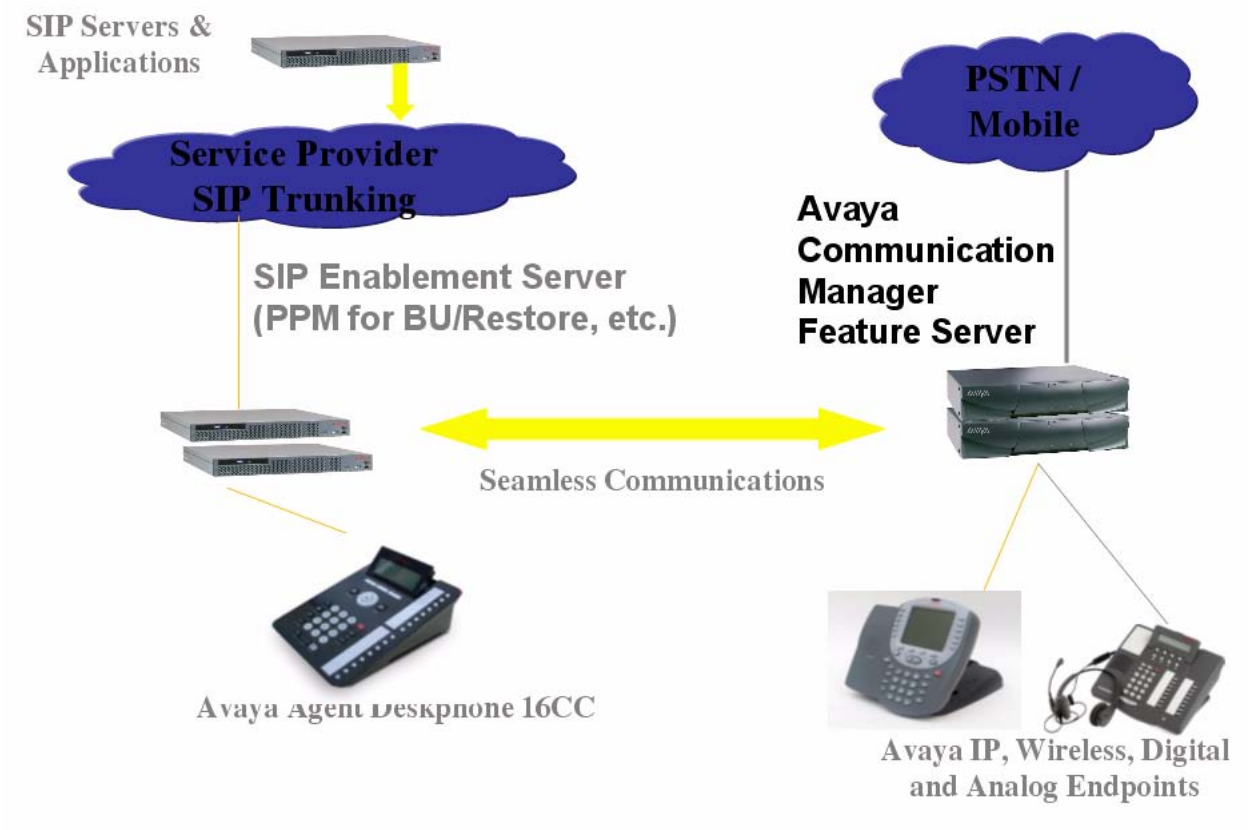
Requirements to Verify for Each IP Telephone

- ❑ **9.** You have an extension number and an Avaya Communication Manager security code (password) for each applicable IP telephone.
- ❑ **10.** You have an OPTIM extension number and an Avaya Communication Manager security code (password) for each telephone, and have configured SIP Enablement Services for each telephone.
- ❑ **11.** A Category 5e LAN jack is available at each telephone site.
- ❑ **12.** Electrical power is provided to each telephone by a Telephone Power Module (DC power jack, which must be ordered separately). If the LAN will supply IEEE-standard power to the telephone, no power module is required.
- ❑ **13.** 1 Category 5e modular line cord is available for the connection between the 16CC telephone and the PC, if applicable.
- ❑ **14.** Verify that the Avaya Agent Deskphone 16CC Telephone package includes the following components:
  - One blank label installed in the phone.
  - A supply of four blank paper labels.
  - 1 telephone set with pre-attached wedge stand.
  - *1600 Series IP Telephone Safety Instructions.*
  - *Avaya Agent Deskphone 16CC Telephone Stand Instructions*.

  Note that if needed, the HIS headset cable must be ordered separately.
- ❑ **15.** Review the 46xxsettings.txt file and/or use the ADDR, SIP, and VIEW local craft procedures as necessary to ensure that the telephone has the proper settings to register and operate. For example, if the SIPROXYSRVR and SIPDOMAIN parameters are not set in the settings file, you must either update the settings file or set the parameters on a telephone-by-telephone basis using the SIP local procedure.

Avaya Agent Deskphone 16CC in the Avaya SIP Environment

Figure 1: Avaya Agent Deskphone 16CC in the SIP Call Center Solution


SIP Servers & Applications
PSTN / Mobile
Service Provider SIP Trunking
Avaya Communication Manager Feature Server
SIP Enablement Server (PPM for BU/Restore, etc.)
Seamless Communications
Avaya Agent Deskphone 16CC
Avaya IP, Wireless, Digital and Analog Endpoints

Assembling the Avaya Agent Deskphone 16CC Telephone

CAUTION:

Be careful to use the correct jack when plugging in the telephone. The jacks are located on the back of the telephone housing and are flanked by icons to represent their correct use.

Powering the Avaya Agent Deskphone 16CC

The Avaya Agent Deskphone 16CC is powered using IEEE 802.3af standard LAN-based powering on the Ethernet line interface.

The 16CC is a Class 2 device, which automatically detects the power source (PoE versus aux power). The 16CC telephone will not pass power through to the secondary Ethernet interface.

Before installing a 16CC Telephone, verify with the LAN administrator whether the LAN supports IEEE 802.3af, and if so, that the telephone should be powered by means of the LAN.

Note:

The last step in assembling the telephone **must** be applying power. Apply power by plugging the modular line cord into the Ethernet wall jack (IEEE powering).

CAUTION:

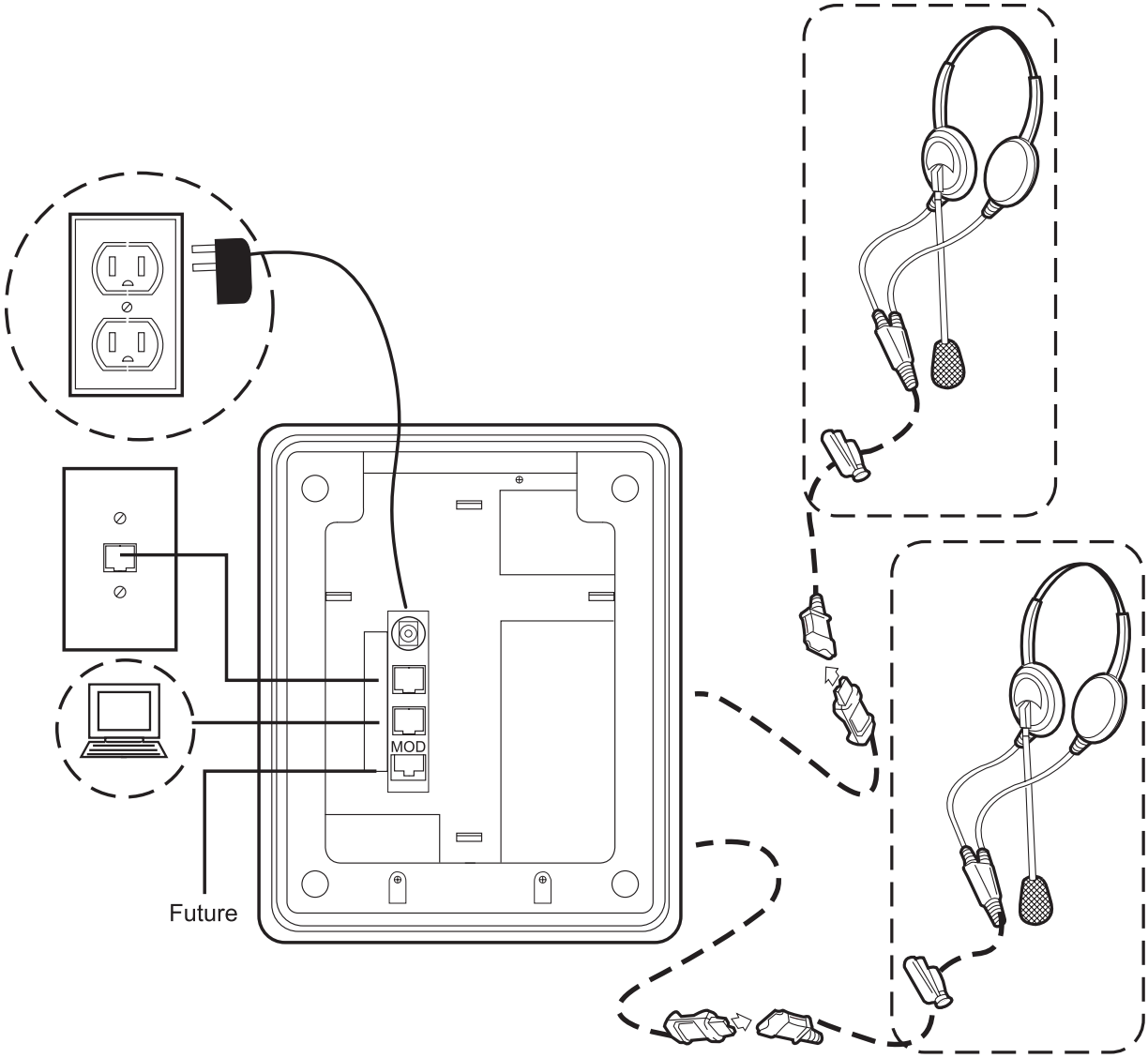
Failure to connect the proper cables with the proper jacks might result in an outage in part of your network.

Power Connections

1. Plug one end of a Category 5e modular line cord into the Ethernet jack of the PC and the other end into the secondary Ethernet jack on the 16CCTelephone, if appropriate.
2. **If the telephone is to be IEEE-powered**, plug one end of the second Category 5e modular line cord into the Ethernet jack on the 16CC Telephone. Plug the other end of this cord into the Ethernet wall jack. If the telephone is to be powered over the Ethernet line interface, you are finished. Do not proceed to Step 3.
3. **If the telephone is to be powered locally**, use the Telephone Power Module (3-prong DC power jack), available separately. See Figure 2 for installation.

Figure 2 provides an illustration to show cord-to-jack connections for local powering on an Avaya Agent Deskphone 16CC Telephone. Use the illustration and associated procedures as appropriate for telephone assembly.

Figure 2: Connection Jacks on an Avaya Agent Deskphone 16CC Telephone



Dynamic Addressing Process

Important:

Before starting this process, ensure that both Avaya Communication Manager (CM) and SIP Enablement Services (SES) are properly set up for your telephone environment.

Note:

Before starting this process you must have an OPTIM extension number for the SIP IP telephone, the Avaya Communication Manager security code (password), and a login and password on the SES server.

Any reference to the HTTP server applies equally to an HTTPS server.

The following Avaya Agent Deskphone 16CC installation description assumes that the process is executed successfully. For errors that might be encountered during the process and the messages displayed, see Chapter 5: Troubleshooting Guidelines.

When you plug the telephone set into the Ethernet wall jack and apply power, if applicable, the following process takes place.

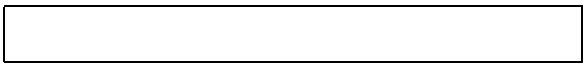
Note:

If the application has already been downloaded, the whole process takes approximately 1 to 2 minutes after the telephone is plugged in. For software upgrades, including the boot file and application file download, the process might take 5 - 10 minutes. The duration is based on LAN loading, how many telephones are being installed at once, and similar factors.

Do not unplug the power cord during the download process.

1. The telephone activates the Ethernet line interface, the PC Ethernet jack, and dial pad input to allow the invocation of procedures. The activation occurs as soon as possible after power-up or a reset.
2. During hardware initialization, configuration parameters are set to default values. The system initialization values for contrast and brightness are checked for non-null values, and set accordingly. The Avaya name displays.
3. The system initialization value for the language file in use is checked for a non-null value, in which case the text strings in the language file named by that value are used for text display. Otherwise, English text strings are displayed.
4. The boot code checks for a primary software code image, loads it into volatile memory, and transfers control to it. If a primary software code image is not found, the boot code loads and transfers control to the backup software code image. Feedback displays in the form of a moving outline on the black squares below the Avaya name. The outline moves from one square to the next to indicate processing is occurring.

When storage of a new backup image begins, **Updating:** displays on the top line and **DO NOT UNPLUG THE PHONE!** displays on the application line until replaced by a subsequent message. In addition, a progress bar consisting of an unfilled black rectangle displays, centered on an Application Line below the Avaya name, as shown below.



The rectangle fills with blocks from left-to-right as storage proceeds, with the filled percentage of the rectangle being approximately the same as the percentage of the file that has been stored.

Important:

Pressing the **Program** softkey at any time during startup invokes the Craft Access entry procedure to allow manual settings, but only if the PROCSTAT (local dialpad procedure status) system value is “0” providing full access to local procedures or if PROCSTAT is “1” in certain instances requiring input. For information, see Chapter 3: Local Administrative Options. If Craft procedures are invoked, the startup process terminates. The **Program** softkey also displays in conjunction with a message describing a processing conflict, for example, when an ARP response indicates a conflict in obtaining the IP Address.

5. The telephone displays the speed of the Ethernet interface in Mbps, that is, 10 or 100. The message No Ethernet displays until the software determines the interface speed.

   Note:

   The Ethernet speed indicated is the LAN interface speed for both the telephone and any attached PC, assuming the administrator has not disabled the latter interface by a PHY2STAT setting.

6. The IP telephone sends a request to the DHCP server and invokes the DHCP process.

   The following message displays:

   ```
   DHCP: s secs
   ```

   where ***s*** is the number of seconds that have elapsed since DHCP was invoked.

7. VLAN verification and tagging occur. The following message displays:

   ```
   VLAN ID = n
   ```

   where ***n*** is the VLAN ID being used.

8. The DHCP server provides IP Addresses for the following hardware:

   - The IP telephone
   - The HTTP/HTTPS server
   - The SIP Proxy server

9. Using the list of IP Addresses provided by the DHCP server, the telephone performs a router check and verifies that the router is on the same subnet as the IP Address. The telephone cycles through the gateway IP Addresses with ARPs or pings until it receives a response.
10. The HTTP process starts with an `HTTP GET` command to the HTTP server, which the telephone displays.

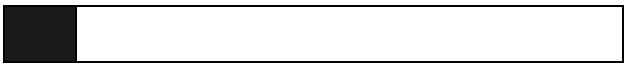
    Note:

    Pressing the **Program** softkey at this time invokes the Craft Access entry procedure to allow manual settings, but only if the PROCSTAT (local dialpad procedure status) system value is “0” giving full access to local procedures or is “1” in certain instances that require input. For information, see Chapter 3: Local Administrative Options. If Craft procedures are invoked, the startup process terminates. The **Program** softkey also displays in conjunction with a Prompt Line message describing a processing conflict, for example, when an ARP response indicates a conflict in obtaining the IP Address.
11. When connected, the telephone looks for an upgrade script file.
12. The HTTP server sends and identifies an upgrade script.

    The GET message might have to be sent several times. Each time the GET message is sent, the URI for the current HTTP request displays.
13. When the telephone determines that the application file received is valid, the following message displays:

    ```
    File Obtained;please wait...
    s secs
    ```

    where ***s*** is the number of elapsed seconds while non-volatile memory is erased.
14. While the application file is saved in flash memory, a progress bar shows the status:

    
15. The telephone attempts to download a valid device certificate using simple certificate enrollment protocol (SCEP).

Simple Certificate Enrollment Protocol (SCEP)

1. When SCEP is initiated the telephone attempts to contact an SCEP server via HTTP, using the value of the configuration parameter MYCERTURL as the URI. The HTTP connection is established to the transport address specified by the value of the configuration parameter HTTPPROXY if HTTPPROXY is not null and if the configuration parameter HTTPEXCEPTIONDOMAINS is null, or if HTTPEXCEPTIONDOMAINS is not null and the rightmost part of the domain portion of MYCERTURL does not match one of the values of HTTPEXCEPTIONDOMAINS. The values of the configuration parameters MYCERTKEYLEN, MYCERTCN, MYCERTDN are used in the certificate request.

2. While the telephone is attempting to contact the SCEP server and to obtain a certificate, the Title Line displays:

   ```
   SCEP: In progress...
   s secs
   ```

   where ***s*** is the number of seconds since SCEP was initiated.

3. If the initial attempt to contact the SCEP server is not successful the telephone continues with start-up, and will not try to contact the SCEP server again unless it is reset or power-cycled.
4. If a connection to the SCEP server is successfully established, if the value of the configuration parameter MYCERTWAIT is 1, SCEP remains in progress until the request for a certificate is granted or rejected.
5. If the request for a certificate is granted, ***SCEP: Successful*** displays for at least one second, and remains until it is replaced by a subsequent display.
6. The SCEP server connection terminates, and the telephone continues with start-up. If the request for a certificate is rejected ***SCEP: Failed*** displays on the Title line for at least one second, and remains until it is replaced by a subsequent display. In this case, the SCEP server connection terminates and the telephone continues with startup.
7. If the value of the configuration parameter MYCERTWAIT is 0 (zero), SCEP remains in progress until the request for a certificate is granted or rejected or until a response is received indicating that the request is pending for manual approval. If the request for a certificate is granted or rejected, the same text will be displayed as specified in Step 5 or 6, above.
8. If a response is received indicating that the request is pending for manual approval, ***SCEP: Pending*** displays on the Title line for at least one second and remains until it is replaced by a subsequent display. The connection to the SCEP server is terminated, and the telephone continues with startup. The telephone periodically attempts to contact MYCERTURL as specified above (but in the background without displaying any message) until the request is granted or rejected.
9. If a device certificate and private key are successfully downloaded, they are saved in non-volatile memory along with the MYCERTURL value used to obtain them.
10. When the point in time is reached at which the percentage of the interval of time specified in the device certificate's Validity object corresponding to the value of the configuration parameter MYCERTRENEW has elapsed, the telephone periodically attempts to contact MYCERTURL as specified above (but in the background without displaying any message) to renew the certificate, until the renewal request is granted or rejected.

Registration and Login

1. Upon successful initialization and power-up, 16CC telephones display the following login prompt:

   ```
   Enter Username
   ```

2. Enter the User Name/ID assigned to this telephone and press the **Enter** softkey.
3. Enter the password and press the **Login** softkey.
4. The telephone contacts PPM, logs in, and downloads the configuration file while the middle line displays:

   ```
   Downloading configuration
   ```

   After configuration the telephone uses SES (SIP Enablement Services) to register with the call server.

5. Successful completion of this process produces a headset dial tone when a call appearance is selected.

   The 16CC telephone was installed successfully.

Chapter 3: Local Administrative Options

Introduction

During installation or after you have successfully installed an IP telephone, you might be instructed to administer one of the manual procedures described in this chapter. These local administrative procedures are also referred to as Craft Procedures.

Note:

You can modify the settings file to set parameters for IP telephones that download their upgrade script and application files from the same HTTP server. See Chapter 4: Maintaining Avaya Agent Deskphone 16CC Telephones and "9600 Series IP Telephone Scripts and Application Files" in Chapter 4 of the *Avaya Agent Deskphone 16CC Administrator Guide*.

CAUTION:

Only trained installers or technicians should perform local (craft) procedures. Perform these procedures **only** if instructed to do so by the system or LAN administrator.

Static administration of these options causes upgrades to work differently than if they are administered dynamically. Values assigned to options in static administration are not changed by upgrade scripts. These values remain stored in the telephone until either:

- a new boot file is downloaded, or
- the IP telephone is reset, as indicated in Reset System Values on page 32.

Use these option-setting procedures **only** with static addressing and, as always, only if instructed by the system or LAN administrator. Do **not** use these option-setting procedures if you are using DHCP. DHCP is the Dynamic Addressing Process, as indicated in Dynamic Addressing Process on page 16.

Accessing Local (Craft) Procedures

Note:

Local procedures can only be invoked when the local (dialpad) procedure status system value (PROCSTAT) is “0”, giving full access to local procedures.

Note:

The factory-set default Craft Access Code is **27238**.

During Telephone Startup:

1. During startup, invoke local procedures by pressing **Program** to display the Craft Access Command Entry screen:

   ```
   Startup interrupted
   ```

2. Press the **Restart** softkey to resume startup, or press **Mute** and enter the local dialpad procedure password (0 to 7 numeric digits), as specified by the system administrator in the system value PROCPSWD. For security purposes, the telephone displays an asterisk for each numeric dialpad press.
3. Press # when password entry is complete.

   The entry is compared to the PROCPSWD value. If they match, the telephone displays the Admin Procedures screen, with the prompt "Select procedure and press Start."
4. Use the navigation arrows to scroll to the local procedure you want, then press the **Select** softkey or the **OK** button.

During Normal Telephone Operation:

1. Invoke all local procedures by pressing the **Mute** button, entering the local (dialpad) procedure password (0 to 7 numeric digits), then pressing the # button.

   A 6-second timeout is in effect between button presses after pressing the **Mute** button. If you do not press a valid button within 6 seconds of pressing the previous button, the collected digits are discarded. In this case, no administrative option is invoked.

   The entry is compared to the PROCPSWD value. If they match, the telephone displays the Admin Procedures screen, and prompts "Select procedure and press Start."
2. Use the navigation arrows to scroll to the local procedure you want, then press the **Select** softkey or the **OK** button.

Entering Data for Administrative Options

This section describes how to enter data at the telephone for administrative options.

1. The first application line is selected when the telephone displays the screen. To select the item on that line, press the appropriate softkey at the bottom of the screen, for example, **Change** or **Save**, or the **OK** button. To select a different line, use the down or up navigation arrows to change the line focus. To move through a list of choices for the line displayed, use the left or right navigation arrows. When the desired line or item displays, then press a softkey or **OK** to select that line. Attempts to enter invalid data are rejected and the telephone emits an error beep.
2. If you enter a numeric digit that causes the IP Address or subnet mask value to exceed 255, or any value to exceed its maximum field value, an error beep tone sounds, the digit is ignored, and the cursor does not move forward.
3. When you press the **Bksp** softkey to backspace, the most recently entered digit or period is erased from the display. The cursor remains in the erased character's former position.
4. Pressing **Back** or **Exit** exits the local procedure. If any changes were made using the ADDR procedure or if the Crafts Entry screen was invoked during startup, the telephone immediately resets. If no ADDR changes were made or if the local procedures were invoked post-startup, the telephone redisplays the display that was effective when the craft options was invoked.

   Note:

   If **PROCSTAT** has been administered to **1**, you will not be able to invoke any administrative options other than **V I E W**.

About Local Administrative Procedures

Craft procedures allow you to customize the Avaya Agent Deskphone 16CC telephone installation for your specific operating environment on a telephone-by-telephone basis. This section provides a description of each local administrative option covered in this guide, with references to the pages on which the option appears.

Note:

Unless otherwise prohibited using administration, a user can view but not change most of the parameters associated with Craft procedures. For more information, see the applicable users guide(s).

Shown As	Craft Procedure Purpose	See:
ADDR...	Network Address information programming	Static Addressing Installation on page 25.
AGC...	Enable/disable Automatic Gain Control	Disable/Enable Automatic Gain Control on page 27.
CLEAR...	Clear all values to factory defaults	Clear Procedure on page 27.
DEBUG...	Enable/disable Debug Mode	Disable/Enable Debug Mode on page 28.
GROUP...	Set the Group Identifier	Group Identifier on page 29.
INT...	Network Interface Control	Interface Control on page 29.
LOG...	Enable/disable Event Logging	Disable/Enable Event Logging on page 31.
LOGOUT	Log off the telephone extension	Logout extension on page 32. You must be logged out as an agent for this procedure to be available.
RESET VALUES	Reset system initialization values to defaults	Reset System Values on page 32.
RESTART PHONE	Restart the telephone	Restart the Telephone on page 33.
SIG...	Set the signaling protocol download flag	Signaling Protocol Identifier on page 33.
SIP...	Configure SIP call settings	Configuring SIP Settings on page 34.
SNTP...	Configure the time server settings	Configuring Time Server Settings on page 35.
SSON...	Set the Site-Specific Option Number	Site-Specific Option Number Setting on page 34.
TEST	Test the LED functions	See Testing LEDs on page 36.
VIEW	View current parameter values and file names	The View Administrative Option on page 36.

Pre-Installation Checklist for Static Addressing

Before performing static programming of address information, verify that all the requirements listed in the Verify These Network Requirements section of the Pre-Installation Checklist are met. You do not have to consider item 4 on page 12, as it refers to the DHCP server. In addition, you must have the values for the following parameters. Failure to do so can cause data entry errors that prevent the telephone from working. Such errors can also have a negative impact on your network. Print copies of this checklist for each subnet.

- ❑ **1.** The IP Address of the telephone.
- ❑ **2.** The IP Address of the router.
- ❑ **3.** The IP subnet mask.
- ❑ **4.** The IP Address of the HTTP and/or /HTTPS server.
- ❑ **5.** The IP Address of the DNS server.
- ❑ **6.** The VLAN ID (the L2QVLAN value).
- ❑ **7.** The VLANTEST value.

Static Addressing Installation

The usual way to assign IP Addresses to IP telephones is the automatic method described in Dynamic Addressing Process on page 16. There might be times, however, when manual assignment of IP Addresses is desired.

CAUTION:

Static addressing is necessary when a DHCP server is unavailable.

Because of the increased opportunities for text entry errors associated with static addressing, Avaya strongly recommends that a DHCP server be installed and static addressing avoided.

Use the following procedure to invoke manual address information programming.

1. When you select **ADDR...** and use the down or up navigation arrow(s) to display the value you want to change, the Static Addressing Local Procedure displays a line at a time as follows:

Static Addressing screen		Line Description and (System Value)
Use DHCP	***Yes***	Yes or No
Phone	***nnn.nnn.nnn.nnn***	Telephone IP Address (IPADD)
Router	***nnn.nnn.nnn.nnn***	Router in use; gateway/router IP Address(es)
Subnet Mask	***nnn.nnn.nnn.nnn***	IP network mask (NETMASK)
HTTPS File Server	***nnn.nnn.nnn.nnn***	IP Address of HTTPS File Server
HTTP File Server	***nnn.nnn.nnn.nnn***	IP Address of the HTTP File Server
DNS Server	***nnn.nnn.nnn.nnn***	DNS server IP Address(es)
VLAN ID	***dddd***	L2QVLAN value
VLANTEST	***ddd***	Number of seconds to wait for a DHCP offer
VLAN Tagging	***0***	L2Q value (0=auto, 1=on, 2=off)

where:

- ***nnn.nnn.nnn.nnn*** is the current IP Address associated with the specific address information to its left, which could be either a value previously set by a technician, or the original IP Address value if no previous change was made,
- ***L2Q text string*** is the text string associated with the current system value of the L2QVLAN parameter.
- ***dddd*** is the current value of L2QVLAN and ***ddd*** is the current value of VLANTEST, respectively.

2. Use the navigation arrows to scroll to the address you want to change, then press the appropriate softkey or use the dialpad to change the value as described in Step 3.
3. Depending on the item you selected, choose one of the following:

If you want to	Then
Change any of the IP Address values (File, Phone, Router, Subnet Mask, &/or DNS Server)	Use the dialpad to enter the new IP Address. IP Addresses have three sets of three digits followed by a period. Pressing ***** following entry of three digits causes a period to be placed in the next position, and the cursor to advance one position to the right. For example, to enter the IP Address 111.222.333.444, press the 1 on the dialpad three times then press *****, press the **2** on the dialpad three times then press *****, press the 3 on the dialpad three times then press *****, then press the 4 on the dialpad three times. Proceed to the next step.
Change the VLAN ID value	Use the dialpad to enter the new static VLAN ID of from 0 to 4094, inclusive. Proceed to the next step.
Change the VLANTEST value	Use the dialpad to enter the new value of the **DHCPOFFER** wait period of from 0 to 999, inclusive. Proceed to the next step.

4. Press the **Save** softkey to store the new setting and the message "Value saved" displays. Continue scrolling if you want to change another value. You can press the **Cancel** softkey to return to the Admin Procedures list without saving a value entered.

   Once the new values are stored, the telephone is reset.

   If a new boot program is downloaded from the HTTP/HTTPS server after you enter static addressing information, you must reenter your static addressing information.

Disable/Enable Automatic Gain Control

Use the following procedure to turn the headset automatic gain control on or off.

1. When you select **AGC...**, the following text displays:

Headset Auto Gain Control	***On***

   where, the setting shown is the text string associated with the current system value of AGCHEAD, defined as:

   - “On” if the AGCHEAD system value is “1”.
   - Off if the AGCHEAD system value is “0”.

2. To change the setting, press the **Right** or **Left** navigation arrow to toggle the selected setting from On to Off or vice versa.
3. Press the **Save** softkey to store the new setting, update the associated system value, and redisplay the Admin Procedures list.

Clear Procedure

Sometimes, you might want to remove *all* administered values, user-specified data, and option settings. Essentially, you want to return a telephone to its initial “clean slate” or out of the box condition. This is usually done when passing a telephone to a new, dedicated user when the **Extension Logout** option is not sufficient. For example, a new user is assigned the same extension, but requires different permissions than the previous user.

The **Clear** option erases all administered data — static programming, file server and call server programming, and user settings, and restores all such data to default values. This option does not affect the software load itself. If you have upgraded the telephone, the telephone retains the latest software. Once you have cleared a telephone, you can administer it normally.

CAUTION:

This procedure erases all administered data, without any possibility of recovering the data. If you want to retain user-specified data and settings like Contacts data or the telephone login and password, see Reset System Values on page 32 instead.

Use the following procedure to clear the telephone of its administrative, user-assigned, and options values.

1. When you select the **CLEAR** procedure, the telephone displays a confirmation screen.
2. If you do not want to clear all values, press the **Exit** softkey to terminate the procedure and retain the current values. Press the **Select** softkey to clear all values to their initial default values.
3. Press the **Clear** softkey to confirm you want to clear any administered data and reset the telephone to the default values.

   The telephone display indicates that clear processing is taking place. The telephone is cleared to its “out of the box” state, resetting the following values to their factory defaults:

   - All system values and system initialization values.
   - User options, parameter settings, identifiers and password.
   - Any user data like Contact Lists or Call Logs are deleted.

   After clearing the values, the telephone resets.

Disable/Enable Debug Mode

Use the following procedure to turn the debug mode for the button module serial port on or off.

CAUTION:

A DEBUG setting of “On” disables any adapter plugged into Slot 2.

1. When you select **DEBUG...** from the Admin Procedures Screen, the following text displays:

Debug Mode	***On***

   where the setting shown is the text string associated with the current system value of DEBUG, defined as:

   - “On” if the DEBUG_ENABLED system value is “1”.
   - “Off” if the DEBUG_ENABLED system value is “0”.
2. Use the navigation arrows or press the **Change** softkey to toggle the selected setting from On to Off or vice versa.

3. Press the **Save** softkey to store the new setting.

   If the value changed from "On" to "Off", the telephone initiates a reset. If the value changed from "Off" to "On" the Admin Procedures screen redisplays.

   The telephone saves the new value.

Group Identifier

Use the following procedure to set or change the Group Identifier.

Note:

Perform this procedure only if the LAN Administrator instructs you to do so.
For more information about groups, see The GROUP System Value on page 40.

1. When you select **GROUP...** from the Admin Procedures Screen, the following text displays:

   ```
   Setting:
   ```

   where the ***setting*** is the current system value of GROUP.

2. Enter a valid **Group** value (0-999).
3. Press **Save** to store the new setting.

Interface Control

Use the following procedure to set or change the interface control value.

1. When you select **INT...** from the Admin Procedures Screen, the following text displays with a prompt to use the Right and Left navigation arrows to select a setting:

   ```
   Ethernet:                    Choice Selector
   PC Ethernet:                 Choice Selector
   ```

The values shown are the text strings associated with the current PHY1STAT on the Ethernet line and the current PHY2STAT system value on the PC Ethernet line.

The PHY1STAT text strings are:

- "Auto" when PHY1STAT = 1
- "10Mbps half" when PHY1STAT = 2
- "10Mbps full" when PHY1STAT = 3
- "100Mbps half" when PHY1STAT = 4
- "100Mbps full" when PHY1STAT = 5

The PHY2STAT text strings are:

- "Disabled" when PHY2STAT = 0
- "Auto" when PHY2STAT = 1
- "10Mbps half" when PHY2STAT = 2
- "10Mbps full" when PHY2STAT = 3
- "100Mbps half" when PHY2STAT = 4
- "100Mbps full" when PHY2STAT = 5

2. To change the Ethernet setting, press the Right navigation arrow or **Change** to cycle through the possible settings.

   Depending on the current value, the next sequential text string is selected and displayed as the setting. For example, if the current value is 10Mbps half (2), pressing the Right navigation arrow changes the value to 10Mbps full (3). If the current value is 100Mbps full (6), pressing the Right navigation arrow changes the value to Auto (1).

3. To change the PC Ethernet setting, select that line and press the Right navigation arrow or **Change** to cycle through the possible settings.
4. Press **Save** to store the new setting(s).

Disable/Enable Event Logging

Use the following procedure to enable or disable logging of system events.

1. When you select **LOG...** from the Admin Procedures Screen, the telephone prompts you to use the Right and Left navigation arrows to select a setting and displays the following text:

Log	**Choice Selector Bar for the SYSLOG_LEVEL value defined below.**
Log Categories...	**Use only when directed to do so by Avaya Services.**
Remote Logging Enabled.	**on/off**
Remote Log Server:	**nnn.nnn.nnn.nnn**

   where the ***text string*** is the wording associated with the current system value of SYSLOG_LEVEL, defined as:

   - “Emergencies” when SYSLOG_ENABLED = 0
   - “Alerts” when SYSLOG_ENABLED = 1
   - “Critical” when SYSLOG_ENABLED = 2
   - “Errors” when SYSLOG_ENABLED = 3
   - “Warning” when SYSLOG_ENABLED = 4
   - “Notice” when SYSLOG_ENABLED = 5
   - “Informational” when SYSLOG_ENABLED= 6
   - “Debug” when SYSLOG_ENABLED = 7

2. To change the **Log** or **Remote Logging Enabled** setting, press the Right (or Left) navigation arrow to cycle through the valid settings. When changing the Remote Log Server value, enter the IP Address to which syslog messages should be sent.

   When changing the **Log** value, depending on the current value, the next sequential text string or value is selected and displayed as the setting. For example, if the current value is Alerts (1), pressing the Right navigation arrow changes the value to Critical (2). If the current value is Debug (7), pressing the Right navigation arrow changes the value to Emergencies (0).

3. Press **Save** to store the new setting.

Logout extension

Use the following procedure to log off a telephone extension. Note that you must be logged out as an agent, otherwise this local procedure option will not be available.

CAUTION:

Once a telephone is logged off, a password and extension might be needed to log back on.

1. When you select **LOGOUT** from the Admin Procedures Screen, the telephone displays a confirmation screen asking if you are sure you want to log out.
2. Press **No** to return to the Admin Procedures screen without logging off the telephone. Press **Yes** to unregister the telephone from the call server.

Reset System Values

Use the following procedure to reset all system initialization values to the application software default values.

CAUTION:

This procedure erases all static information, without any possibility of recovering the data.

1. When you select **RESET VALUES**, the telephone displays a confirmation screen asking if you are sure you want to reset the telephone.
2. Press **No** to return to the Admin Procedures list without resetting the telephone. Press **Yes** to start the telephone reset.

   The telephone resets from the beginning of registration, which might take a few minutes. A reset:

   - Resets all system values and system initialization values except AUTH and AUTH_ONLY to default values.
   - Resets call server values to their defaults.
   - Deletes any entries in the Redial buffer.
   - Does not affect user-specified data and settings like Contacts data or the telephone login and password. To remove this type of data, see the Clear Procedure on page 27.

Restart the Telephone

Use the following procedure to restart the telephone.

1. When you select **RESTART PHONE**, the telephone displays a confirmation screen asking if you are sure you want to restart the telephone.
2. Press the **Back** softkey to return to the Admin Procedures list without restarting the telephone. Press the **Restart** softkey to proceed with the registration steps covered in the Dynamic Addressing Process on page 16.

   The telephone displays a confirmation message regarding the restart. A restart does not affect user-specified data and settings like Contacts data or the telephone login and password.
   The remainder of the restart procedure depends on the status of the boot and application files. For information, see Appendix A: Restart Scenarios.

Signaling Protocol Identifier

Use the following procedure to set or change the Signaling Protocol Identifier. A valid SIG Protocol Identifier is either **0** (default), **1** (H.323), or **2** (SIP).

Note:

Perform this procedure only if the LAN Administrator instructs you to do so.

1. When you select **SIG...**, the telephone prompts you to use the Right and Left navigation arrows to select a setting and displays the following text:

Setting: ***text string***	**Choice Selector**

   where the ***text string*** is the wording associated with the current system value of SIG, defined as:

   - “Default” when SIG = 0
   - “H.323” when SIG = 1
   - “SIP” when SIG = 2

2. To change the setting, press **Change** until you see the setting you want or use the Right (or Left) navigation arrow to cycle through the settings.
   Depending on the current value, the next sequential text string is selected and displayed as the setting. For example, if the current value is SIP (2), pressing the Right arrow changes the value to 0 (default). If the current value is H.323 (1), pressing Right arrow changes the value to 2 (SIP).
3. Press **Save** to store the new setting.

   The remainder of this procedure depends on the status of the boot and application files. For information, see Appendix A: Restart Scenarios.

Site-Specific Option Number Setting

CAUTION:

Do **not** perform this procedure if you are using static addressing. Perform this procedure **only** if you are using DHCP **and** the LAN administrator instructs you to do this.

Use the following procedure to set the Site-Specific Option Number (SSON).

1. When you select **SSON...** from the Admin Procedures list, the following text displays:

   ```
   Setting:
   ```

   where the ***setting*** is the current system value of DHCP_SSON.

2. To change the setting, press the appropriate softkey(s) and use the dialpad to enter a valid SSON value between 128 and 255.

3. Press **Save** to store the new setting.

Configuring SIP Settings

Use this procedure to set up SIP-related settings like identifying the SIP Proxy Server.

1. When you select **SIP...** from the Admin Procedures list, the telephone prompts you to use the Right and Left navigation arrows to change a setting and displays the following settings and their active values:

Setting	Description/Example
SIP Mode:	**Proxied** or **Peer-to-Peer**.
SIP Domain:	e.g., avaya.com
Avaya Environment:	**Yes** or **No -** indicates whether only an Avaya environment (CM & SES) is in effect.
Transport Type:	**TCP** or **TLS** or **UDP**.
SIP Proxy Server:	*IP Address*
Avaya Config Server:	IP Address of Avaya configuration server - only if PPM (Personal Profile Management) is not located at the same server as the SIP Proxy server.
User ID Field:	Ignore; not currently used.

2. To change a setting:
   - If the field shows Right/Left Arrow indicators, press the **Right** (or **Left**) navigation arrow to cycle through the settings. Depending on the current value, the next sequential value displays.
   - If the field does not show Arrow indicators, press the appropriate softkey(s) and use the dialpad to enter the new value.
3. Press **Save** to store the new setting.

Configuring Time Server Settings

Use this procedure to designate a server for Simple Network Time Protocol (SNTP) and to set corresponding values.

1. When you select **SNTP...** from the Admin Procedures list, the telephone displays the following settings and prompts you to enter the IP Address of the SNTP server:

	Description/Example
`SNTP Server:`	IP address of the network time server.
`SNTP GMT Offset:`	Local time difference in hours from Greenwich Mean Time, e.g., NJ is **-5**.
`SNTP Daylight Savings Time:`	Indicates whether the telephone should recognize Daylight Savings Time (DST)(0=no DST, 1=DST activated as per DSTOFFSET, 2=automatic based on DSTSTART and DSTSTOP values.

2. To change a setting:
   - If the field shows Right/Left Arrow indicators, press the **Right** (or **Left**) navigation arrow to cycle through the available settings.
   - If the field does not show Arrow indicators, press the appropriate softkey(s) and use the dialpad to enter the new value.
3. Press **Save** to store the new setting.

Testing LEDs

Use the following procedure to initiate a telephone self-test of the display and button LEDs.

1. When you select the **Test** procedure, and press the **Test** softkey to confirm that selection, the LEDs for the 16 call appearance/feature buttons flash on and off. Any buttons with LEDs on the face of the telephone, such as **Mute** and **Call Log**, also flash on and off.

The View Administrative Option

If you are using static addressing and encounter problems, use the following procedure to verify the current values of system parameters and file versions.

Note:

Unless otherwise prevented using administration, the user can view but not change most of the parameters associated with Craft Local Procedures. For more information about this option, see the *Avaya Agent Deskphone 16CC User Guide* (Document Number 16-602096).

Note:

If the View Network Information option is not available due to being disabled by administration, use the **ADDR** option to view IP Addresses. See Static Addressing Installation on page 25. The IP Addresses might have been entered incorrectly. Verify whether you were provided with correct IP Addresses.

1. When you select **VIEW** from the Admin Procedures Screen, the following text displays:

Static Addressing screen	Description and (System Value)
Model	Telephone Model, e.g., 9630
Application File	The “big app” filename.
Boot File	The "little app" filename
Group	Three digit GROUP value
MAC	MAC Address
Protocol	Signaling protocol in effect, e.g., SIP
Phone SN	Telephone Serial Number
PWB SN	Printed Wiring Board (circuit board) Serial Number (may not apply to all phones)
PWB comcode	Software-readable PWB serial number and comcode (may not apply to all phones)

2. Use the navigation arrows to scroll through the viewable information.
3. Press **Back** at any time to return to the Admin Procedures list.

Chapter 4: Maintaining Avaya Agent Deskphone 16CC Telephones

Introduction

This chapter covers maintaining the Avaya Agent Deskphone 16CC telephones, for example, downloading a new telephone software version from the Avaya support Web site. The recommended configuration is the latest call server software and the latest SIP IP telephone firmware.

Downloading Software Upgrades

The files necessary to operate Avaya Agent Deskphone 16CC telephones are bundled together on the Avaya Web site at: http://www.avaya.com/support.

The 16CC bundle contains:

- An upgrade script file, **16ccupgrade.txt**, which allows you to upgrade to new software releases and new functionality without having to replace 16CC telephones. The upgrade script tells the telephone whether a software upgrade is needed. All Avaya Agent Deskphone 16CC telephones attempt to read this file whenever they reset. The upgrade script file is also used to point to the settings file.
- Parameter settings and values that customize the telephones for your enterprise. One settings file is used for all your Avaya IP Telephones.
- Application files for all current Avaya Agent Deskphone 16CC telephones.
- Other useful information such as a ReadMe file.

In addition to the upgrade script, application files, and Read Me file, you need the latest binary code the Avaya Agent Deskphone 16CC telephones use. All of these required files are in a self-extracting executable file that comes in both zipped and unzipped format.

To get the correct files:

- Go to http://www.avaya.com/support.
- Search for **Agent Deskphone 16CC**.
- Select **Downloads**.

Download Procedure

The Avaya-provided upgrade script file and the binaries included in the zip files upgrade the Avaya Agent Deskphone 16CC telephones. You should not need to modify them. It is essential that all the binary files be together on the file server. When downloading a new release onto a file server with an existing release already on it, we recommend that you:

- Stop the file server.
- Back up all the current file server directories as applicable.
- Copy your ***46xxsettings.txt*** file to a backup location.
- Remove all the files in the download directory. This ensures that you do not have an inappropriate binary or configuration file on the server. The only system values that can be used in the Conditional statement are: BOOTNAME, GROUP, and SIG.
- Download the self-extracting executable file, or the corresponding zip file.
- Extract all the files.
- Copy your ***46xxsettings.txt*** file back into the download directory.
- Check the Readme files for release-specific information.
- Modify the ***46xxsettings.txt*** file as desired.
- Restart the HTTP/HTTPS server.
- Reset your Avaya IP Telephones.

Updating the Settings File

An important maintenance activity is to update the settings file for any changes to your customized settings. Checking the Read Me file can provide an indication of the impact of a software upgrade on your current settings.

Important:

You use one settings file for all of your Avaya H.323 IP or SIP IP telephones including the Avaya Agent Deskphone 16CC, 9600 Series H.323 IP or SIP IP Telephones, the 4600 Series H.323 IP or SIP IP Telephones, and the 1600 Series H.323 IP Telephones. Each of these telephone series/models has its own administrator guide that describes settings and parameters unique to specific models or series. Administrator guides are available at http://www.avaya.com/support.

The Avaya-provided upgrade script file includes lines that tell the telephone to **GET *46xxsettings.txt***. These lines cause the telephone to use HTTP/HTTPS to attempt to download the file specified in the **GET** command. If the file is obtained, its contents are interpreted as an additional script file. That is how your settings are changed from the default settings. If the file cannot be obtained, the telephone continues processing the upgrade script file. If the settings file is successfully obtained but does not include any setting changes the telephone stops using HTTP. This happens when you initially download the script file template from the Avaya support Web site, before you make any changes. When the settings file contains no setting changes, the telephone does not go back to the upgrade script file.

You can change the settings file name, if desired, as long as you also edit the corresponding **GET** command in the upgrade script file. However, we encourage you **not** to alter the Avaya-provided upgrade script file. If Avaya changes the upgrade script file in the future, any changes you have made will be lost. We strongly encourage you to use the ***46xxsettings*** file to customize your settings instead.

For detailed information about modifying the settings file, see Chapter 7 in the *Avaya Agent Deskphone 16CC Administrator Guide*. See Chapter 8 in the *Avaya Agent Deskphone 16CC Administrator Guide* for details about specific values. You need only specify settings that vary from defaults, although specifying defaults is harmless.

Downloading Language Files

Language files must be stored in the same location as the 46xxsettings file or under the HTTP Server directory, defined using the **SET HTTPDIR [*HTTP server directory path*]** command.

You can download a new language file version only if the filename differs from the language file previously downloaded. Alternately, you can remove the old language file using an empty **SET LANGUAGES** command in the 46xxsettings file before downloading a language file with the same filename.

Note:

Language files for Avaya Agent Deskphone 16CC telephones have a **.xml** filename extension.

The GROUP System Value

You might have different communities of end users, all of which have the same model telephone, but which require different administered settings.

The simplest way to separate groups of users is to associate each of them with a number. Use the GROUP system value for this purpose. The GROUP system value **cannot** be set in the 46xxsettings file. The GROUP system value can only be set on a telephone-by-telephone basis using a local Craft procedure. To set up groups, first identify which telephones are associated with which group and designate a number for each group. The number can be any integer from 0 to 999, with 0 as the default, meaning your largest group would be assigned as Group 0.

Then, at each non-default telephone, invoke the **GROUP...** Local (Craft) Administrative procedure as specified in Chapter 3: Local Administrative Options and specify which GROUP number to use. Once the GROUP assignments are in place, edit the configuration file to allow each telephone of the appropriate group to download its proper settings.

Here is an illustration of a possible settings file with associates in different groups at the same location:

```
IF $GROUP SEQ 1 goto GROUP1
IF $GROUP SEQ 2 goto GROUP2
{specify settings unique to Group 0}
goto END

# GROUP1
{specify settings unique to Group 1}
goto END

# GROUP2
{specify settings unique to Group 2}

# END
{specify settings common to all Groups}
```

Chapter 5: Troubleshooting Guidelines

Introduction

This chapter describes problems that might occur during both installation and normal operation of the Avaya Agent Deskphone 16CC and possible ways of resolving these problems.

This chapter contains the following sections:

- Descriptions of error conditions and methods for resolving them.
- Error and status messages, and methods for resolving them.

Error Conditions

There are three areas where installers can troubleshoot problems before seeking assistance from the system or LAN administrator:

1. Check both the power and Ethernet wiring for the following conditions:
   - Whether all components are plugged in correctly.
   - Check LAN connectivity in both directions to all servers - DHCP, HTTP, HTTPS, Avaya Communication Manager, and/or SIP Proxy server.
   - If the telephone is supposed to be powered from the LAN, ensure that the LAN is properly administered and is compliant with IEEE 803.3af.
2. If you are using static addressing:
   - Use the **VIEW** Craft procedure to find the names of the files being used and verify that these filenames match those on the HTTP/HTTPS server. See The View Administrative Option on page 36 for more information. Check the Avaya Web site to verify whether the correct files are being used.
   - Use the **ADDR** Craft procedure to verify IP Addresses. See Static Addressing Installation on page 25 for information.
3. If the 16CC is not communicating with the system (DHCP, HTTP, or CM call server), make a note of the last message displayed, as described in Table 1 and/or Table 2. Consult the system administrator.
4. If you expect the telephone to be IEEE-powered, verify with the LAN administrator that IEEE power is indeed supported on the LAN.

DTMF Tones

SIP telephones send DTMF tones according to the SEND_DTMF_TYPE parameter setting. The default setting of this parameter sends DTMF "tones" as "telephone event" RTP packets per RFC 2833. Whether a non-SIP telephone hears these DTMF tones depends on whether the Avaya Communication Manager media resource converts the "telephone event" RTP packets into audio RTP packets.

Power Interruption

If power to an Avaya Agent Deskphone 16CC is interrupted while the telephone is saving the binary file, the application on the HTTP/HTTPS server can stop responding. If this occurs, restart the HTTP/HTTPS server.

Installation Error and Status Messages

The Avaya Agent Deskphone 16CC issues messages in the currently selected language, or if the telephone is logged off, in the language specified by the SYSTEM_LANGUAGE parameter value. If English is not the selected language, the telephone displays messages in English only when they are associated with local procedures, for example, the **VIEW** Craft local procedure.

Most of the messages in Table 1 display only for about 30 seconds or less, and then the telephone resets. However, some messages might require manual intervention.

Table 1: Possible Error and Status Messages During Installation of Avaya Agent Deskphone 16CC Telephones

Message	Cause/Resolution
`Address Conflict`	**CAUSE:** The telephone has detected an IP Address conflict. **RESOLUTION:** Verify administration to identify duplicate IP Address(es).
`Bad Router`	**CAUSE:** The telephone cannot find a router based on the information in the DHCP file. **RESOLUTION:** Use static addressing to specify a router address, or change administration on DHCP, as indicated in the *Avaya Agent Deskphone 16CC Administrator Guide*.

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Table 1: Possible Error and Status Messages During Installation of Avaya Agent Deskphone 16CC Telephones (continued)

Message	Cause/Resolution
`DHCP: CONFLICT`	**CAUSE:** At least one of the IP Addresses offered by the DHCP server conflicts with another address. **RESOLUTION:** Review DHCP server administration to identify duplicate IP Address(es).
`Finding router...`	**CAUSE:** The telephone is proceeding through boot-up. **RESOLUTION:** Allow the telephone to continue.
`No Ethernet`	**CAUSE:** When first plugged in (or during operation), the SIP IP telephone is unable to communicate with the Ethernet. **RESOLUTION:** Verify the connection to the Ethernet jack, verify the jack is Category 5, verify power is applied on the LAN to that jack, etc.
`Restarting...`	**CAUSE:** The telephone is in the initial stage of rebooting. **RESOLUTION:** Allow the telephone to continue.
`SCEP: Failed`	**CAUSE:** Simple Certificate Enrollment Protocol (SCEP) has rejected a request for a certificate. **RESOLUTION:** Although the SCEP server connection is terminated, startup continues. No action required.
`Subnet conflict`	**CAUSE:** The telephone is not on the same VLAN subnet as the router. **RESOLUTION:** Administer an IP Address on the telephone using Static Addressing Installation, or administer network equipment to administer the telephone appropriately.
`Updating: DO NOT UNPLUG THE TELEPHONE`	**CAUSE:** The telephone is updating its software image. **RESOLUTION:** Allow the telephone to continue.

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Operational Errors and Status Messages

Table 2 identifies some of the possible operational problems that might be encountered after successful Avaya Agent Deskphone 16CC installation. The user guide for a specific telephone model also contains troubleshooting for users having problems with specific telephone applications. Most of the problems reported by users are not likely to be problems with the telephone itself. Problems are more likely LAN-based, where Quality of Service, server administration, and other issues can impact end-user perception of telephone performance.

Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC

Condition		Cause/Resolution
After (Extension) Login, the progress bar shows just a few completed bars and stops moving.		**CAUSE:** Login has failed. **RESOLUTION:** Check that the LAN and File servers are operating correctly. Re-attempt login.
The telephone continually reboots, or reboots continuously about every 15 minutes.		**CAUSE:** The telephone cannot find the call server. **RESOLUTION:** Ensure that SIPPROXYSRVR is administered either manually or through DHCP or HTTP, as appropriate. **CAUSE:** This might be a firmware fault because the MAC address in memory is corrupted. **RESOLUTION:** Return the telephone to Avaya for repair.
The message light on the telephone turns on and off intermittently, but the telephone never registers.		**CAUSE:** This is a hardware fault. **RESOLUTION:** The telephone must be returned to Avaya for repair.
The telephone stops working in the middle of a call,	**AND** no lights are lit on the telephone and the display is not lit.	**CAUSE:** Loss of power. **RESOLUTION:** Check the connections between the telephone, the power supply, and the power jack. For example, verify that either static addressing was not used or that any changes to static addresses were entered correctly.
	AND power to the telephone is fine (and the telephone might have gone through the restarting sequence).	**CAUSE:** Loss of path to the call server or the other party's telephone, DHCP Lease expired, or DHCP server not available when telephone attempts to renegotiate DHCP lease. **RESOLUTION:** As above.

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Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition		Cause/Resolution
The telephone was working, but does not work now,	**AND** no lights are lit on the telephone and the display is not lit.	**CAUSE:** Loss of power. **RESOLUTION:** Check the connections between the telephone, the power supply, and the power jack.
	AND power to the telephone is fine, but there is no dial tone or the call appearances or feature buttons do not work.	**CAUSE:** Loss of communication with the call server. **RESOLUTION:** Check LAN continuity from the call server to the telephone using ARP or trace-route and from the telephone to the call server by invoking a Feature button. Verify that administration has not changed for the LAN equipment (routers, servers, etc.) between the call server and the telephone. Verify no one changed the telephone settings locally using the **VIEW** and **ADDR** craft procedures, as described earlier in this guide. Verify the telephone volume is set high enough.
	AND the telephone was recently moved.	**CAUSE:** Loss of communication with the call server. **RESOLUTION:** As above, but pay particular attention to the possibility that the telephone is being routed to a different DHCP server, or even a different proxy server. If so, the new server might need to be administered to support the telephone.
	AND the network was recently changed to upgrade or replace servers, re-administer the CM call server, SIP, add or change NAT, etc.	**CAUSE:** Loss of communication with SES. **RESOLUTION:** As above.

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Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition		Cause/Resolution
The telephone works, but the audio quality is poor, specifically:		
	the user hears an echo when speaking.	**CAUSE:** Echo from digital-to-analog conversion on your CM call server trunk. **RESOLUTION:** Verify which trunk is causing the echo, and swap the trunk's Trunk Termination parameter on the call server. **CAUSE:** Improper headset adapter. **RESOLUTION:** Replace adapter with Avaya's M12LU or 3412-HIC adapters. We recommend the M12LU, since it supports Automatic Gain Control.
	the user experiences sudden silences such as gaps in speech, or static, clipped or garbled speech, etc.	**CAUSE:** Jitter, delay, dropped packets, etc. **RESOLUTION:** You can have the user provide diagnostic data by invoking the Network Information feature under the **A** (Avaya) button on the telephone. One or more Quality of Service (QoS) features should be implemented in the network as covered in Chapter 3: Local Administrative Options. **CAUSE:** Improper non-Category 5 wiring. **RESOLUTION:** Replace non-Category 5 wiring with Category 5 wiring.
	the user hears fluctuations in the volume level which are worse at the beginning of a call, or when a call goes from no one talking abruptly to a loud voice.	**CAUSE:** The user has changed the Automatic Gain Control (AGC) or environmental acoustics are not consistent with the current audio settings. **RESOLUTION:** Try a different setting (on/off) for the AGCHEAD parameter.
The telephone works properly, except incoming DTMF tones are not received.		**CAUSE:** The TN2302AP board does not pass in-band DTMF tones. **RESOLUTION:** None; the board is operating as designed.

Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition		Cause/Resolution
When a line is selected, a short dial tone burst sounds followed by a reorder/fast busy tone.		**CAUSE:** The extension is provisioned on SES and some CM forms, but not on the off-pbx-telephone station-mapping form. CM does not know to map back to SES and rejects the line reservation. **RESOLUTION:** Map the extension on the off-pbx-telephone station-mapping form, a sample of which appears in Appendix C of the *Avaya Agent Deskphone 16CC Administrator Guide*. **CAUSE:** Possible error in SIG group configuration on CM, which indicates the default region for the SIP trunk to Communication Manager. **RESOLUTION:** On the IP-network-region form, ensure that the region pointed to is configured with an **authoritative domain** that is the same as the SES SIP domain. Also verify that the station in question has not been redirected to a different network region on the ip-network map.
The HTTP/HTTPS script file and settings file are ignored (not being used by the telephone).		**CAUSE:** The system value AUTH is set to 1 (HTTPS required) but no valid address is specified in TLSSRVR. **RESOLUTION:** Change AUTH to 0 (zero), or enter a valid address for TLSSRVR.
The HTTP/HTTPS script file is ignored or not used by the telephone,	**AND** the HTTP/ HTTPS server is a LINUX or UNIX system. **AND** telephone administration recently changed.	**CAUSE:** UNIX and LINUX systems use case-sensitive addressing and file labels. **RESOLUTION:** Verify the file names and path in the script file are accurately specified. **CAUSE:** The ***16ccupgrade.txt*** file was edited incorrectly, renamed, etc. **RESOLUTION:** Download a clean copy of the ***16ccupgrade.txt*** file from the Avaya support Web site at http://www.avaya.com/support, and do not edit or rename it. Customize or change *only* the ***46xxsettings*** file, as discussed in Chapter 4: Maintaining Avaya Agent Deskphone 16CC Telephones.
Some settings in the settings file are being ignored while other settings are being used properly.		**CAUSE:** Improper settings file administration. **RESOLUTION:** Verify that customized settings are correctly spelled and formatted.

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Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition		Cause/Resolution
Some settings in the settings file are being ignored while other settings are being used properly,	**AND** the setting being ignored is the AGCHEAD setting.	**CAUSE:** The user changed the AGC setting. **RESOLUTION:** Have the user reset the AGC value back to the desired setting.
	AND the setting being ignored is the TIMEFORMAT setting.	**CAUSE:** The user changed the TIMEFORMAT setting. **RESOLUTION:** Close the trouble ticket. The user wants it that way.
Telephone power is interrupted while the telephone is saving the application file **and** the HTTP/HTTPS application stops responding.		**CAUSE:** The HTTP/HTTPS server stops responding if power is interrupted while a telephone is saving the application file. **RESOLUTION:** Restart the HTTP/HTTPS server, as applicable.
The user indicates an application or option is not available.		**CAUSE:** The ***46xxsettings*** file is not pointed to accurately, or is not properly administered to allow the application. **RESOLUTION:** Assuming the user is meant to have that application, verify the 46xxsettings file is properly specified for your system, including case if your file server is UNIX or LINUX, and extension. Then, verify all the relevant parameters indicated in Table 7 of the *Avaya Agent Deskphone 16CC Administrator Guide*, are accurately specified in the 46xxsettings file.
User data disappeared when the user logged off one telephone and logged into another telephone.		**CAUSE:** Possible PPM problem. **RESOLUTION:** Contact the SES administrator.
The telephone displays **DHCP Error**.		**CAUSE:** The telephone has failed to receive all configured parameters (e.g., Call Server IP address) via DHCP. **RESOLUTION:** Confirm that the telephone is configured for the correct DHCP SSON value - the SSON parameter default is 242, and not 176.

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Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition		Cause/Resolution
The telephone displays **HTTPS: *n* Server**.		**CAUSE:** The telephone has failed to find the HTTP Server via SSL/TLS connection and proceeds to search for the HTTP Server via standard HTTP connection. **RESOLUTION:** If network design does not support access to an HTTP Server via SSL/TLS, then this is NOT an error. If the telephone is configured to access HTTP Server via SSL/TLS, then: • Confirm phone is configured with correct File Server IP address. • Confirm there is network connectivity to server.
The telephone displays **Bad File Server Address**.		**CAUSE:** The telephone has failed to find an HTTP server from which to download the 46xxsettings file. **RESOLUTION:** Confirm the telephone is configured with the correct File Server IP address. If the telephone receives the File Server address via DHCP, confirm the telephone's DHCP SSON setting is correct. The default is 242, not 176. Confirm there is network connectivity to the server.
The telephone displays **Upgrade was not successful**.	**AND** the telephone tries once to load the boot application and when that fails, brings up what's already in flash. **AND** the telephone has passed a critical stage in upgrade process (erasing memory), but has not successfully downloaded all files.	**CAUSE:** Boot app cannot be loaded. Partial file download. **RESOLUTION:** Use the local craft procedure VIEW to see what version is loaded on the telephone. Confirm upgrade files are in appropriate directories on HTTP server Also, verify there is network connectivity to the HTTP Server and that the HTTP Server is up and running. If Error Code 404 displays, the filename is invalid, e.g. 46x.txt instead of 46xx.txt.

Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition	Cause/Resolution
The telephone is stuck on **Login Proceeding** message.	**CAUSE:** The telephone is unsuccessfully attempting to contact the Call Server. **RESOLUTION:** Verify that the telephone is configured with correct Call Server IP address If the telephone receives the Call Server address via DHCP, confirm that the DHCP SSON setting is correct - the SSON default is 242, not 176. Verify there is network connectivity to the Call Server and that the Call Server is up and running.
The telephone displays **Login Failed**.	**CAUSE:** SES needs to point to the CM's PROCR interface for the “Media Server Admin Address.” It must point to a specially-provisioned PPM Administration account on CM. **RESOLUTION:** The PPM Administration account on the CM side must have several specific parameters set. Specifically: • login group must be users • additional group must be prof18 or equivalent • shell access must be no shell access
The telephone displays **Extension in Use**.	**CAUSE:** The extension entered by the user is currently in use on another phone. **RESOLUTION:** The user has two options: • Log in with a different extension. User presses ‘Retry’ softkey, then enters new extension, password. • Log in with original extension, while unregistering the extension from the other phone. User presses ‘Retry’ softkey, and enters/confirms original extension, password. The user presses ‘Yes’ softkey when prompted to Unregister User.
The telephone displays **Extension Error**.	**CAUSE:** The extension entered is not recognized on the current call server. **RESOLUTION:** Verify the extension was entered correctly. Verify the Call Server IP Address is correct.

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Table 2: Operational Error Conditions for Avaya Agent Deskphone 16CC (continued)

Condition	Cause/Resolution
The telephone displays **Feature invocation failed** when a Contact search is initiated.	**CAUSE:** The telephone cannot search the Contact list because the SES Profile Service Password is not properly administered. **RESOLUTION:** Access SES to set up the Profile Service Password. For information, see the SES installation documentation applicable to your server.
Squealing and echo when using the M12LU/CM modular headset adapter on the 16CC telephone.	**CAUSE:** Volume/audio settings. **RESOLUTION:** For best results, set the telephone's volume control to mid-range (level 4). Turn off the sidetone setting by assigning the telephone to a Group using the 46xxsettings.txt script with the AUDIOSTHD parameter set to 4 (SET AUDIOSTHD 4).
User reports that the Join softkey does not appear while adding a person to a conference call or that an error beep occurs when pressing Conference button for the second time.	**CAUSE:** The telephone is operating as expected. **RESOLUTION:** Both issues require the called party to answer the call before another action can be taken: • The **Join** softkey does not display until the party being called answers the call. When the person answers, the Join softkey displays and should be pressed to add the person to the conference. • If pressed before the called party answers, the Conference button sends an error tone. Once the person answers, pressing the Conference button (or the Join softkey) will add the person to the conference.

Appendix A: Restart Scenarios

Scenarios for the Restart Process

The sequence of the restart process depends on the status of the boot and application files. This appendix explains the different scenarios possible.

Note:

The file names used in this appendix are examples only. Your particular file names are likely to be different.

The procedures described in this appendix assume restarts occur during normal telephone operation rather than during telephone startup.

Restart the Telephone

Use the following procedure to restart the telephone.

1. Invoke RESTART by pressing the **Mute** button.
2. Enter the local (dialpad) procedure password (0 to 7 numeric digits), then press the # button.

   Note:

   A 6-second timeout is in effect between button presses. If you do not press a valid button within 6 seconds of pressing the previous button, the collected digits are discarded. In this case, no administrative option is invoked.

   The entry is compared to the PROCPSWD value. If they match, the telephone displays the Craft Local Procedure screen and prompts "Select procedure and press Start."
3. Use the navigation arrows to scroll to **RESTART PHONE**, then press the **Select** softkey or the **OK** button. The telephone displays a confirmation screen asking if you are sure you want to perform a restart.

4. Press **Back** to return to the Craft Local Procedure screen without restarting the telephone. Press **Restart** to proceed with the registration steps covered in the Dynamic Addressing Process on page 16.

   A restart does not affect user-specified data and settings like Contacts data or the telephone login and password.

   The remainder of the restart procedure depends on the status of the boot and application files:

If this condition applies:	See:
Boot File Needs to be Upgraded	Boot File Needs to be Upgraded on page 54.
Latest Boot File Loaded/No Application File or Application File Needs to be Upgraded	Latest Boot File Loaded/No Application File or Application File Needs to be Upgraded on page 57.
Latest Boot File and System-Specific Application File Already Loaded	Latest Boot File and System-Specific Application File Already Loaded on page 59.

Boot File Needs to be Upgraded

The telephone automatically downloads an upgraded boot file if applicable.

1. The telephone activates the Ethernet line interface, the PC Ethernet jack, and dial pad input to allow the invocation of procedures. The activation occurs as soon as possible after power-up or a reset.
2. During hardware initialization, the system initialization values for contrast and brightness are checked for non-null values, and set accordingly. The Avaya name displays with squares underneath it that darken as processing proceeds.
3. The system initialization value for the language file in use is checked for a non-null value, in which case the text strings in the language file named by that value are used for text display. Otherwise, English text strings are displayed.
4. The boot code checks for a primary software code image, loads it into volatile memory, and transfers control to it. If a primary software code image is not found, the boot code loads and transfers control to the backup software code image. Feedback displays in the form of a moving outline on the black squares below the logo. The outline moves from one square to the next to indicate processing is occurring.
5. When storage of a new backup image begins, **Updating: DO NOT UNPLUG THE PHONE!** displays until replaced by a subsequent message. In addition, a progress bar consisting of an unfilled black rectangle displays, which fills from left-to-right as storage proceeds, with the filled percentage of the rectangle being approximately the same as the percentage of the file that has been stored.

6. When control is passed to the software that was just loaded, the following messages display:

```
Starting...
```

```
Updating boot code...
DO NOT UNPLUG THE PHONE!
```

This message continues while the new boot code is being written into RAM.

Important:

Pressing **Program** at this time invokes the Craft Access entry procedure to allow manual settings, but only if the PROCSTAT (local dialpad procedure status) system value is “0” providing full access to local procedures or when PROCSTAT is “1” in certain situations requiring input. For information, see Chapter 3: Local Administrative Options.

7. The telephone displays the speed of the Ethernet interface in Mbps, that is, 0, 10, or 100. The message `No Ethernet` displays until the software determines the interface speed.

Note:

The Ethernet speed indicated is the LAN interface speed for both the telephone and any attached PC, assuming the administrator has not disabled the latter interface by a PHY2STAT setting.

8. The IP telephone sends a request to the DHCP server and invokes the DHCP process.

The following message displays:

```
DHCP: s secs
```

where ***s*** is the number of seconds that have elapsed since DHCP was invoked. The number of elapsed seconds is incremented once per second, until DHCP successfully completes.

9. VLAN verification and tagging occur. The following message displays:

```
VLAN ID = n
```

where ***n*** is the VLAN ID being used.

10. The DHCP server provides IP Addresses for the following hardware:

- The IP telephone
- The HTTP/HTTPS server
- The SIP Proxy server

11. Using the list of IP Addresses provided by the DHCP server, the telephone performs a router check and verifies that the router is on the same subnet as the IP Address. The telephone cycles through the gateway IP Addresses with ARPs or pings until it receives a response.
12. The HTTP process starts with an HTTP GET command to the HTTP server.

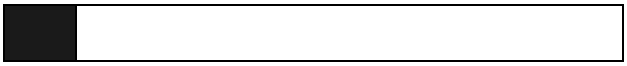
    Important:

    Pressing **Program** at this time invokes the Craft Access entry procedure to allow manual settings, but only if the PROCSTAT (local dialpad procedure status) system value is “0” giving full access to local procedures or when PROCSTAT is “1” in certain situations requiring input. For information, see Chapter 3: Local Administrative Options.
13. When connected, the telephone looks for an upgrade script file.

    The HTTP server sends and identifies an upgrade script. Each time the GET message is sent, the URI for the current HTTP request displays.
14. When the telephone determines that the application file received is valid, the following message displays:

    ```
    File Obtained;please wait...
    s secs
    ```

    where ***s*** is the number of elapsed seconds while non-volatile memory is erased.
15. While the application file is saved in flash memory, a progress bar shows the status:

    
16. The telephone attempts to download a valid device certificate using simple certificate enrollment protocol (SCEP).
17. While the telephone is attempting to contact the SCEP server and to obtain a certificate, the display shows:

    ```
    SCEP: In progress...
    s secs
    ```

    where ***s*** is the number of seconds since SCEP was initiated. If the request for a certificate is granted, ***SCEP: Successful*** displays on the Title line for at least one second, and remains until it is replaced by a subsequent display.
18. If a device certificate and private key are successfully downloaded, they are saved in non-volatile memory along with the MYCERTURL value used to obtain them.

19. Upon successful initialization and power-up, SIP IP telephones display the Login screen with the following prompt:

    ```
    Enter Username
    ```

20. Enter the User Name/ID assigned to this telephone and press the **Enter** softkey.
21. Enter the password and press the **Enter** softkey.
    The extension is visible during entry but the password displays as asterisks. The telephone contacts PPM (Personal Profile Manager) to get the configuration file. The telephone displays the following message:

    ```
    Downloading configuration
    ```

    After configuration the telephone uses SES (SIP Enablement Services) to register with the call server.
22. Successful completion of this process produces a headset dial tone when a call appearance is selected.
23. Continue with the next procedure.

Latest Boot File Loaded/No Application File or Application File Needs to be Upgraded

This procedure occurs with normal application file upgrades.

1. The telephone displays:

   ```
   Restarting...
   ```

2. The telephone detects and displays the speed of the Ethernet interface in Mbps, that is, 0, 10, or 100. The message `No Ethernet` displays until the software determines the interface speed.

   Note:

   The Ethernet speed indicated is the LAN interface speed for both the telephone and any attached PC.

3. The software determines whether sufficient IP Address information was downloaded. In this scenario, it is discovered that sufficient information has **not** been downloaded. The following message displays while the DHCP process is invoked:

   ```
   DHCP: 0 secs
   * to program
   ```

   The number of elapsed seconds is incremented once per second, until DHCP successfully completes.

4. While the IP telephone establishes a TCP connection to the HTTP server, the telephone displays the following message:

   HTTP:*n ipadd*

   where ***n*** is the number of the IP Address obtained from the HTTP server and ***ipadd*** is the IP Address.
5. The following message displays while the HTTP process is invoked:

   HTTP: *n* uri

   The number increments once per second, until the HTTP server responds.
6. While the upgrade script file is being downloaded from the HTTP server, all IP telephones display the following message:

   HTTP:*n sc* etag

   where ***n*** is the number of the IP Address obtained from the HTTP server, *sc* is the status code of the HTTP response and *etag* is the value of the ETag header.
7. The script file is processed. The software determines that the name of the boot code file in the telephone (BOOTNAME) is not the latest version. APPNAME is set to the name of an application file to replace the boot code. The following message displays while the application file is downloaded into RAM with a progress bar to indicate the download status:

   app_filename

8. When the telephone determines that the application file received is valid, the following message displays:

   File Obtained;please wait...
   ***s* secs**

   where ***s*** is the number of seconds that elapse while non-volatile memory is erased.
9. The following message displays while the application file is stored in flash memory with a progress bar to indicate activity:

   Saving to flash

   where ***n*** is the percentage of the file that was stored, and ***x*** is the number of elapsed seconds. This usually takes longer than the file's download.
10. The telephone is reset so the new system-specific application file can be executed.
11. Continue with the next procedure.

Latest Boot File and System-Specific Application File Already Loaded

This happens with normal resets.

1. The telephone displays:

   ```
   Restarting...
   ```

2. The telephone detects and displays the speed of the Ethernet interface in Mbps, that is, 0, 10, or 100. The message `No Ethernet` displays until the software determines the interface speed.

   Note:

   The Ethernet speed indicated is the LAN interface speed for both the telephone and any attached PC.

3. The software determines whether sufficient IP Address information was downloaded. In this scenario, it is discovered that sufficient information has **not** been downloaded. The following message displays while the DHCP process is invoked:

   ```
   DHCP: s secs
   ```

   where ***s*** is the number of elapsed seconds until DHCP successfully completes.

4. VLAN verification and tagging occur. The following message displays:

   ```
   VLAN ID = n
   ```

   where ***n*** is the VLAN ID being used.

5. The HTTP process starts with an HTTP GET command to obtain a URI for the HTTP server, which displays on the telephones' Title Line. When connected, the HTTP server sends and identifies an upgrade script.

   The GET message might have to be sent several times. Each time the GET message is sent, the URI for the current HTTP request displays.

6. The script file is processed. The software determines that the name of the boot code file in the telephone (BOOTNAME) is the latest version, and the name of the application file in the telephone is the same as APPNAME.

7. System-specific registration with the call server is invoked.

8. When registration finishes, a dial tone is available on the telephone.

Appendix B: Glossary of Terms

Terms Used in This Guide

802.1D **802.1Q**	802.1Q defines a layer 2 frame structure that supports VLAN identification and a QoS mechanism usually referred to as 802.1D.
802.1X	Authentication method for a protocol requiring a network device to authenticate with a back-end Authentication Server before gaining network access. Avaya Agent Deskphone 16CC telephones do not support IEEE 802.1X.
Application-specific	Specific to a particular “application” running inside the telephone. For example, configuration file downloading, backup and restore of user data, HTTP push, and the Web browser are all internal applications that use the HTTP protocol. Similarly, the RTCP and CNA clients are internal applications that can invoke traceroute. This term does not include Web-page-based “applications” rendered in the Web browser.
ARP	Address Resolution Protocol, used, for example, to verify that the IP Address provided by the DHCP server is not in use by another IP telephone.
Call Server	In an Avaya SIP environment, the “call server” is the combination of SIP Enablement Services (SES) and Avaya Communication Manager.
CLAN	Control LAN, type of Gatekeeper circuit pack.
CNA	Converged Network Analyzer.
DHCP	Dynamic Host Configuration Protocol, an IETF protocol used to automate IP Address allocation and management.
DiffServ	Differentiated Services, an IP-based QoS mechanism.
DNS	Domain Name System, an IETF standard for ASCII strings to represent IP Addresses. The Domain Name System (DNS) is a distributed Internet directory service. DNS is used mostly to translate between domain names and IP Addresses. Avaya Agent Deskphone 16CC telephones can use DNS to resolve names into IP Addresses. In DHCP, TFTP, and HTTP files, DNS names can be used wherever IP Addresses were available as long as a valid DNS server is identified first.
Gatekeeper	H.323 application that performs essential control, administrative, and managerial functions in the media server. Sometimes called CLAN in Avaya documents.
H.323	A TCP/IP-based protocol for VoIP signaling.
HTTP	Hypertext Transfer Protocol, used to request and transmit pages on the World Wide Web.

HTTPS	A secure version of HTTP.
IETF	Internet Engineering Task Force, the organization that produces standards for communications on the internet.
LAN	Local Area Network.
MAC	Media Access Control, ID of an endpoint.
PPM	Personal Profile Manager, part of the SIP Enablement Services (SES) platform. PPM is responsible for maintaining and managing end users' personal information in the system.
QoS	Quality of Service, used to refer to several mechanisms intended to improve audio quality over packet-based networks.
RTCP	Real-time Transport Control Protocol.
RTP	Real-time Transport Protocol.
SCEP	Simple Certificate Enrollment Protocol, used to obtain a digital certificate.
SES	SIP Enablement Services.
SIP	Session Initiation Protocol, a protocol for VoIP signaling.
SRTCP	Secure Real-time Transport Control Protocol.
SRTP	Secure Real-time Transport Protocol.
System - specific	Specific to a particular type of call server, for example, Avaya Communication Manager (CM). "System-specific signaling" refers to messages specific to the signaling protocol used by the system, for example, H.323 and/or CCMS messages used by CM and IP Office. "System-specific procedures" refers to telephone software procedures that are specific to the call server with which the software is intended to be used.
TCP	Transmission Control Protocol, a connection-oriented transport-layer protocol.
TLS	Transport Layer Security, an enhancement of Secure Sockets Layer (SSL). TLS is compatible with SSL 3.0 and allows for privacy and data integrity between two communicating applications.
UDP	User Datagram Protocol, a connectionless transport-layer protocol.
Unnamed Registration	Registration with Avaya Communication Manager by an IP telephone with no extension. Allows limited outgoing calling.
URI & URL	Uniform Resource Identifier and Uniform Resource Locator. Names for the strings used to reference resources on the Internet (for example, HTTP://....). URI is the newer term.
VLAN	Virtual LAN.
VoIP	Voice over IP, a class of technology for sending audio data and signaling over LANs.

Appendix C: Related Documentation

IETF Documents

IETF documents provide standards relevant to IP Telephony and are available for free from the IETF Web site: http://www.ietf.org/rfc.html.

ITU Documents

Access the ITU Web site for more information about ITU guidelines and documents, available for a fee from the ITU Web site: http://www.itu.int.

ISO/IEC, ANSI/IEEE Documents

Access the ISO/IEC standards Web site for more information about IP Telephony standards, guidelines, and published documents: http://www.iec.ch.

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